

PATENT
Customer Number 22,852
Attorney Docket No. 07206.0021-01000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

George Tuszyński, et al.

Serial No.: To be assigned
(Divisional of 09/197,770)

Filed: October 3, 2001

For: RETROINVERSO
POLYPEPTIDES THAT MIMIC
OR INHIBIT
THROMBOSPONDIN

)
)
) ATTN: Office of Petitions
)
) Group Art Unit: To be assigned
) (prior appln.: 1653)
)
) Examiner: To be assigned
) (prior appln.: A. Daveport)
)
)
)
)

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. § 1.97(b)

Pursuant to 37 C.F.R. §§ 1.56 and 1.97(b), Applicants bring to the attention of the Examiner the documents listed on the attached PTO 1449. This Information Disclosure Statement is being filed before the mailing date of a first Office Action on the merits for the above-referenced application.

Copies of the listed documents were previously submitted in prior application no. 09/197,770, filed November 23, 1998, which Applicants rely upon for benefit of priority under 35 U.S.C. § 120. Thus, in accordance with 37 C.F.R. § 1.98(d), copies of the listed documents are not provided with this submission. Applicants respectfully request that the Examiner consider the listed documents and indicate that they were considered by making appropriate notations on the attached forms.

LAW OFFICES
FINNEGAN, HENDERSON,
FARABOW, GARRETT,
& DUNNER, L.L.P.
1300 I STREET, N.W.
WASHINGTON, DC 20005
202-408-4000

RECEIVED
FEB 27 2002
OFFICE OF PETITIONS

This submission does not represent that a search has been made or that no better art exists and does not constitute an admission that each or all of the listed documents are material or constitute "prior art." If the Examiner applies any of the documents as prior art against any claim in the application and Applicants determine that the cited documents do not constitute "prior art" under United States law, Applicants reserve the right to present to the office the relevant facts and law regarding the appropriate status of such documents.

Applicants further reserve the right to take appropriate action to establish the patentability of the disclosed invention over the listed documents, should one or more of the documents be applied against the claims of the present application.

If there is any fee due in connection with the filing of this Statement, please charge the fee to our Deposit Account No. 06-0916.

Respectfully submitted,

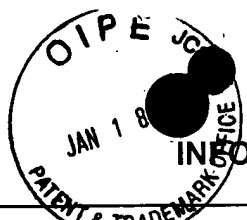
FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: January 18, 2002

By: 

M. Todd Rands
Reg. No. 46,249

RECEIVED
FEB 27 2002
OFFICE OF PETITIONS



OMB No. 0651-0011

INFORMATION DISCLOSURE CITATION

Atty. Docket No.	07206.062-101000	Serial No.	To be assigned
Applicant George TUSZYNSKI et al.			
Filing Date	October 3, 2001	Group:	1653

U.S. PATENT DOCUMENTS

Examiner Initial*		Document Number	Issue Date	Name	Class	Sub Class	Filing Date If Appropriate
	A.	5,426,100	06/20/95	Deutch et al.	514	15	
	B.	5,192,744	03/09/93	Bouck et al.	514	8	
	C.	5,190,918	03/02/93	Deutch et al.	514	15	
	D.	4,683,291	07/28/87	Zimmerman et al.	530	324	
	E.	4,305,872	12/15/81	Johnston et al.	260	112.5	
	F.	4,244,946	01/13/81	Rivier et al.	424	177	
	G.	4,105,602	08/08/78	Colescott et al.	260	8	
	H.	3,972,859	08/03/76	Fujino et al.	260	112.5	
	I.	3,862,925	01/28/75	Sarantakis et al.	260	112.5	
	J.	3,842,067	10/15/74	Sarantakis et al.	260	112.5	

FOREIGN PATENT DOCUMENTS

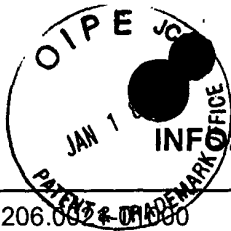
		Document Number	Publication Date	Country	Class	Sub Class	Translation Yes or No
	K.	WO 92/17499	10/15/92	PCT			
	L.	WO 90/01496	2/22/90	PCT			
	M.	EP 0263 608	4/13/88	EP			
	N.						
	O.						

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

	1.	Adams, "The Thrombospondin Family," <i>Current Biology</i> , 3:188-190 (1993).
	2.	Aiken, "Isolation and Identification of a 23,000-Dalton Heparin Binding Fragment from the Amino Terminus of Bovine Thrombospondin," <i>Ach. Bio. Biophysy</i> , 250:257-262 (1986).
	3.	Albo, "Thrombospondin-1 and Transforming Growth Factor-Beta1 Promote Breast Tumor Cell Invasion Through Up-Regulation Of The Plasminogen/Plasmin System," <i>Surgery</i> , 122:493-500 (1997).
	4.	Alexander, "Quantitative Adsorption of Platelet Glycoprotein G. (Thrombin-Sensitive Protein, Thrombospondin) to Barium Citrate," <i>Biochem. J.</i> , 217:67-71 (1984).

RECEIVED

FEB 27 2002



INFORMATION DISCLOSURE CITATION

OMB No. 0651-0011

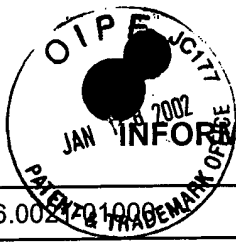
Atty. Docket No.	07206.0024-01000	Serial No.	To be assigned
Applicant	George TUSZYNSKI et al.		
Filing Date	October 3, 2001	Group:	1653

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)		
5.	Arap et al, "Cancer Treatment by Targeted Drug Delivery to Tumor Vasculature in a Mouse Model," <i>Science</i> , 279:377-380 (1998).	
6.	Arnoletti, "Computer-Assisted Image Analysis of Tumor Sections for a New Thrombospondin Receptor," <i>The American Journal of Surgery</i> , 168:433-436 (1994).	
7.	Asch, "Thrombospondin Sequence Motif (CSVTCG) is Responsible for CD36 Binding," <i>Biochem. Biophys. Res. Commun.</i> , 82:1208-1217 (1992).	
8.	Barsky, "Laminin Molecular Domains Which Alter Metastasis in a Murine Model," <i>J. Clin. Inv.</i> , 74:843-48 (1984).	
9.	Clezardin, "Expression of Thrombospondin (TSP1) and Its Receptors (CD36 and CD51) in Normal, Hyperplastic, and Neoplastic Human Breast," <i>Cancer Res.</i> , 53:1421-1430 (1993).	
10.	Clezardin, "Isolation of Thrombospondin Released from Thrombin-Stimulated Human Platelets by Fast Protein Liquid Chromatography on an Anion Exchange Mono-Q Column," <i>J. Chromatog.</i> 296:249-56 (1984).	
11.	Connors, "Prodrugs in Cancer Chemotherapy," <i>Stem Cells</i> , 13:501-511 (1995).	
12.	Crombie, "Identification of a CD36-related Thrombospondin 1-binding Domain in HIV-1 Envelope Glycoprotein gp120: Relationship to HIV-1-specific inhibitory Factors in Human Saliva," <i>J. Exp. Med.</i> , 187:25-35 (1998).	
13.	Davis, "The Vaso-Occlusive Crisis Of Sickle Cell Disease," <i>BMJ</i> , 302: 1551-52 (1991).	
14.	Depoli, "Thrombospondin Interaction with Plasminogen, Evidence for Binding to a Specific Region of the Kringle Structure of Plasminogen," <i>Blood</i> , 73:976-82 (1989).	
15.	Dixit, "Characterization of a cDNA Encoding the Heparin and Collagen Binding Domains of Human Thrombospondin," <i>Proc. Natl. Acad. Sci.</i> 83:5449-53 (1986).	
16.	Dixit, "A Monoclonal Antibody Against Human Thrombospondin Inhibits Platelet Aggregation," <i>Proc. Natl. Acad. Sci.</i> , 82:3472-76 (1985).	
17.	Dixit, "Isolation and Characterization of a Heparin-binding Domain from the Amino Terminus of Platelet Thrombospondin," <i>J. Biol. Chem.</i> 259:10100-105 (1954).	
18.	Dunwiddie, "Antistasin, a Leech-derived Inhibitor of Factor Xa," <i>J. Biol. Chem.</i> , 264:16694-99 (1989).	
19.	Fields, "Virus Interactions with Cell Uptake Mechanisms," <i>Fundamental Virology</i> , 2nd Ed., 269-270 (1991).	
20.	Gasic, "Antimetastatic Effects Associated with Platelet Reduction," <i>Proc. Natl. Acad. Sci.</i> , 61:46-52 (1968).	
21.	Gasic, "Role of Plasma, Platelets, and Endothelial Cells in Tumor Metastasis," <i>Cancer Metastasis Rev.</i> , 3:99-116 (1984).	

RECEIVED

FEB 27 2002

OFFICE OF PETITIONS



OMB No. 0651-0011

INFORMATION DISCLOSURE CITATION

Atty. Docket No.	07206.002701000	Serial No.	To be assigned
Applicant	George TUSZYNSKI et al.		
Filing Date	October 3, 2001	Group:	1653

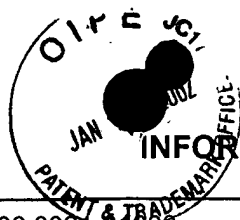
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

22.	Geiger, "Amine Protecting Groups," <i>The Peptides</i> , 3:3-88 (1981).
23.	Goundis, "Properdin, The Terminal Complement Components, Thrombospondin and the Circumsporozoite Protein of Malaria Parasites Contain Similar Sequence Motifs," <i>Nature</i> , 335:82-85 (1988).
24.	Han, "Cloning and Expression of cDNA Encoding Antistasin, a Leech-derived Protein Having Anti-coagulant and Anti-metastatic Properties," <i>Gene</i> , 75:47-57 (1989).
25.	Hennessy, "Complete Thrombospondin mRNA Sequence Includes Potential Regulatory Sites in the 3' Untranslated Region," <i>J. Cell. Biol.</i> , 108:729-36 (1989).
26.	Herbst, "Differential Effects of Laminin, Intact Type IV Collagen, and Specific Domains of Type IV Collagen on Endothelial Cell Adhesion and Migration," <i>J. Cell. Biol.</i> , 106:1365-1373 (1988).
27.	Holt, "Antistasin, an Inhibitor of Coagulation and Metastasis, Binds to Sulfatide (Gal (3-SO ₄) (Beta-1-1 Cer) and Has a Sequence Homology with Other Proteins that Bind Sulfated Glycoconjugates," <i>J. Biol. Chem.</i> , 264:12138-40 (1989).
28.	Houghten, "General Method for the Rapid Solid-Phase Synthesis of Large Numbers of Peptides: Specificity of Antigen-Antibody Interaction at the Level of Individual Amino Acids," <i>Proc. Natl. Acad. Sci.</i> , 82:5131-5135 (1985).
29.	Humphries, "A Synthetic Peptide from Fibronectin Inhibits Experimental Metastasis of Murine Melanoma Cells," <i>Science</i> , 233:467-70 (1986).
30.	Iwamoto, "YIGSR, A Synthetic Laminin Pentapeptide, Inhibits Experimental Metastasis Formation," <i>Science</i> , 238:1132-34 (1987).
31.	J. Varani, "Characterization of Thrombospondin Synthesis, Secretion and Cell Surface Expression by Human Tumor Cells," <i>Clin. Expl. Metastasis</i> , 7:265-76 (1989).
32.	Jaffe, "Cultured Human Fibroblasts Synthesize and Secrete Thrombospondin and Incorporate it into Extracellular Matrix," <i>Proc. Natl. Acad. Sci.</i> , 80:998-1002 (1983).
33.	Kanemoto, "Identification of an Amino Acid Sequence from the Laminin A Chain that Stimulates Metastasis and Collagenase IV Production," <i>Proc. Natl. Acad. Sci.</i> , 87:2279-83 (1990).
34.	Kobayashi, "Partial Amino Acid Sequence of Human Thrombospondin as Determined by Analysis of cDNA Clones: Homology to Malarial Circumsporozoite Proteins," <i>Biochemistry</i> , 25:8418-25 (1986).
35.	Lawler, "Isolation and Characterization of a High Molecular Weight Glycoprotein from Human Blood Platelets," <i>J. Biol. Chem.</i> , 253:8609-16 (1978).
36.	Lawler, "Structural Organization of the Thrombospondin Molecule," <i>Seminars in Thrombosis & Hemostasis</i> , 13:245-254 (1987).
37.	Lawler, "The Release of Heparin Binding Peptides from Platelet Thrombospondin by Proteolytic Action of Thrombin, Plasmin and Trypsin," <i>Thromb. Res.</i> , 22:267-79 (1981).

RECEIVED

FEB 27 2002

OFFICE OF PETITIONS



INFORMATION DISCLOSURE CITATION

OMB No. 0651-0011

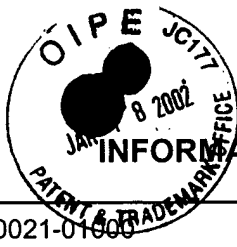
Atty. Docket No.	07206.0021-04000	Serial No.	To be assigned
Applicant	George TUSZYNSKI et al.		
Filing Date	October 3, 2001	Group:	1653

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)		
38.	Lawler, "The Structural and Functional Properties of Thrombospondin," <i>Blood</i> , 67:1197-1209 (1986).	
39.	Lawler, "The Structure of Human Thrombospondin, an Adhesive Glycoprotein with Multiple Calcium-Binding Sites and Homologies with Several Different Positions," <i>J. Cell Biol.</i> , 103:1635-48 (1986).	
40.	Lawler, "Thrombospondin in Essential Thrombocythemia," <i>Blood</i> , 67:555-558 (1986).	
41.	Leung, "Role of Thrombospondin in Platelet Aggregation," <i>J. Clin. Invest.</i> , 74:1764-1772 (1984).	
42.	Majack, "Cell Surface Thrombospondin is Functionally Essential for Vascular Smooth Muscle Cell Proliferation," <i>J. Biol. Chem.</i> , 106:415-422 (1988).	
43.	Majack, "Control of Smooth Muscle Cell Growth by Components of the Extracellular Matrix: Autocrine Role for Thrombospondin," <i>Proc. Natl. Acad. Sci.</i> , 83:9050-54 (1986).	
44.	Majack, "Platelet-derived Growth Factor and Heparin-like Glycosaminoglycans Regulate Thrombospondin Synthesis and Deposition in the Matrix by Smooth Muscle Cells," <i>J. Cell Biol.</i> , 101: 1059-1070 (1985).	
45.	Märki, "Total Solid-Phase Synthesis of Porcine Gut Gastrin Releasing Peptide (GRP), a Mammalian Bombesin," <i>J. Am. Chem. Soc.</i> , 103:3178-85 (1981).	
46.	McPherson, "Isolation and Characterization of a Glycoprotein Secreted by Aortic Endothelial Cells in Culture," <i>J. Biol. Chem.</i> , 256:11330-36 (1981).	
47.	Merrifield, "Solid Phase Peptide Synthesis: I. The Synthesis of a Tetrapeptide," <i>J. Am. Chem. Soc.</i> , 85:2149-2154 (1963).	
48.	Mosher, "Physiology of Thrombospondin," <i>Annu. Rev. Med.</i> , 41:85-97 (1990).	
49.	Mumby, "Interactions of Thrombospondin with Extracellular Matrix Proteins: Selective Binding to Type V Collagen," <i>J. Cell Biol.</i> , 98:646-52 (1984).	
50.	Nathan, "Plasma Thrombospondin Levels in Patients with Gynecologic Malignancies," <i>Cancer</i> , 73:2853-2858 (1994).	
51.	Nicosia, "Matrix-Bound Thrombospondin Promotes Angiogenesis in Vitro," <i>J. Cell Biol.</i> , 124:183-193 (1994).	
52.	Nusrat, "A Role for Urokinase in Mediating Phorbol Ester Induced Macrophage-like Maturation and Adhesion of U937 and Other Myeloid Cells," <i>Fibrinolysis</i> , 6:71-76 (1992).	
53.	Pierschbacher, "Cell Attachment Activity of Fibronectin Can Be Duplicated by Small Synthetic Fragments of the Molecule," <i>Nature</i> , 309:30-33 (1984).	
54.	Prater, "The Properdin-like Type I Repeats of Human Thrombospondin Contain a Cell Attachment Site," <i>J. Cell Biol.</i> , 112:1031-1040 (1991).	

RECEIVED

FEB 27 2002

OFFICE OF PETITIONS



INFORMATION DISCLOSURE CITATION

OMB No. 0651-0011

Atty. Docket No.	07206.0021-01000	Serial No.	To be assigned
Applicant	George TUSZYNSKI et al.		
Filing Date	October 3, 2001	Group:	1653

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

55.	Pratt, "Thrombospondin in Malignant and Non-Malignant Breast Tissue," <i>Eur. J. Cancer Clin. Oncol.</i> , 25:343-350 (1989).
56.	Qian, "Thrombospondin-1 Modulates Angiogenesis in Vitro by Up-Regulation of Matrix Metalloproteinase-9 in Endothelial Cells," <i>Exp. Cell Res.</i> , 235:403-412 (1997).
57.	Raugi, "Thrombospondin Synthesis and Secretion by Cells in Culture," <i>J. Cell Biol.</i> , 95:351-354 (1982).
58.	Rich, "Cell-Adhesive Motif in Region II of Malarial Circumsporozoite Protein," <i>Science</i> , 249:1574-1577 (1990).
59.	Riser, "Thrombospondin Binding by Human Squamous Carcinoma and Melanoma Cells: Relationship to Biological Activity," <i>Exp. Cell Res.</i> , 174:319-329 (1988).
60.	Robson, "A Highly Conserved Amino-Acid Sequence in Thrombospondin, Properdin and in Proteins from Sporozoites and Blood Stages of a Human Malaria Parasite," <i>Nature</i> , 335:79-82 (1988).
61.	Roth, "Histopathology and clinical assessment correlate with the cysteine-serine-valine-threonine-systein-glycine (CSVTCG) receptor of thrombospondin-1 in breast tumors," <i>Histology & Histopathology</i> , 12:1013-1018 (1997).
62.	Sasaki, "Sequence of the cDNA Encoding the Laminin B1 Chain Reveals a Multidomain Protein Containing Cysteine-Rich Repeats," <i>Proc. Natl. Acad. Sci.</i> , 84:935-39 (1987).
63.	Schiller, "Synthesis of Side-chain to Side-chain Cyclone Peptide Analogs on Solid Supports," <i>Int. J. Peptide Protein Res.</i> , 25:171-177 (1985).
64.	Stewart, "Solid-Phase Peptide Synthesis," <i>The Chemistry of Solid Phase Peptide Synthesis</i> , 1-26 (1969).
65.	Sugihara, "Thrombospondin Mediates Adherence of CD36+ Sickie Reticulocytes to Endothelial Cells," <i>Blood</i> , 80(10):2634-2642 (1993).
66.	Switalska, "Radioimmunoassay of Human Platelet Thrombospondin: Different Patterns of Thrombospondin and Beta-Thromboglobulin Antigen Secretion and Clearance from the Circulation," <i>J. Lab. Clin. Med.</i> , 106:690-700 (1985).
67.	Tam, "S _N 1 and S _N 2 Mechanisms for the Deprotection of Synthetic Peptides by Hydrogen Fluoride," <i>Int. J. Pept. Prot. Res.</i> 21:57-65 (1983).
68.	Terranova, "Modulation of the Metastatic Activity of Melanoma Cells by Laminin and Fibronectin," <i>Science</i> , 226:982-85 (1984).
69.	Tuszynski, "Biological Activities of Peptides and Peptide Analogues Derived from Common Sequences Present in Thrombospondin, Properdin, and Malarial Proteins," <i>J. Cell Biol.</i> , 116:209-217 (1992).
70.	Tuszynski, "Identification and Characterization of a Tumor Cell Receptor for CSVTCG, a Thrombospondin Adhesive Domain," <i>J. Cell Biol.</i> , 120:513-521 (1993).

RECEIVED

FEB 27 2002

OFFICE OF PETITIONS

INFORMATION DISCLOSURE CITATION

OMB No. 0651-0011

Atty. Docket No.	07206.0021-01000	Serial No.	To be assigned
Applicant	George TUSZYNSKI et al.		
Filing Date	October 3, 2001	Group:	1653

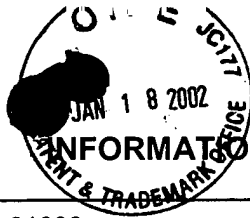
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

71.	Tuszynski, "Isolation and Characterization of Antistasin," <i>J. Biol. Chem.</i> , 262:9718-9723 (1987).
72.	Tuszynski, "Localization of Thrombospondin and Its Cysteine-Serine-Valine-Threonine-Systeine-Glycine-Specific Receptor in Human Breast Carcinoma," <i>Lab. Invest.</i> , 70:228-233 (1994).
73.	Tuszynski, "Role of Thrombospondin in Hemostasis and Cell Adhesion," <i>Seminars in Thrombosis & Hemostasis</i> , 13:361-68 (1987).
74.	Tuszynski, "Spectrophotometric Quantitation of Anchorage-Dependent Cell Numbers Using the Bicinchoninic Acid Protein Assay Reagent," <i>Anal. Bio.</i> , 84:189-91 (1990).
75.	Tuszynski, "The Interaction of Human Platelet Thrombospondin with Fibrinogen: Thrombospondin Purification and Specificity of interaction," <i>J. Biol. Chem.</i> , 260:12240-5 (1985).
76.	Tuszynski, "Thrombospondin Levels in Patients with Malignancy," <i>Thromb. And Haemost.</i> , 67:607-611 (1992).
77.	Tuszynski, "Thrombospondin Promotes Cell-Substratum Adhesion," <i>Science</i> , 236:1570-1573 (1987).
78.	Tuszynski, "Thrombospondin Promotes Platelet Aggregation," <i>Blood</i> , 72:109-115 (1988).
79.	Tuszynski, "Thrombospondin, a Potentiator of Tumor Cell Metastasis," <i>Cancer Res.</i> , 47:4130-4133 (1987).
80.	Vale, "Characterization of a 41-Residue Ovine Hypothalamic Peptide that Stimulates Secretion of Corticotropin and β -Endorphin," <i>Science</i> , 213:1394-1397 (1981).
81.	Varani, "Thrombospondin-Induced Adhesion of Human Keratinocytes," <i>J. Clin. Invest.</i> , 81:1527-44 (1988).
82.	Wang, "Inhibition of Breast Cancer Progression by an antibody to a Thrombospondin-1 Receptor," <i>Surgery</i> , 120:449-454 (1996).
83.	Wang, "Thrombospondin-1 (TSP-1) Promotes the Invasive Properties of Human Breast Cancer," <i>J. Surgical Res.</i> , 63:39-43 (1996).
84.	Wong, "Thrombospondin and Other Possible Related Matrix Proteins in Malignant and Benign Breast Disease," <i>Am. J. Pathol.</i> , 140:1473-1482 (1992).
85.	Yabkowitz, "Expression and Initial Characterization of a Recombinant Human Thrombospondin Heparin Binding Domain," <i>J. Biol. Chem.</i> , 264:10888-96 (1989).
86.	Yamashita, "Plasma Thrombospondin Levels in Patients with Colorectal Carcinoma," <i>Cancer</i> , 82:632-638 (1998).

RECEIVED

FEB 27 2002

OFFICE OF PETITIONS



OMB No. 0651-0011

Atty. Docket No.	07206.0021-01000	Serial No.	To be assigned
Applicant	George TUSZYNSKI et al.		
Filing Date	October 3, 2001	Group:	1653

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)	
Examiner	Date Considered
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	
Form PTO 1449	Patent and Trademark Office - U.S. Department of Commerce

258220

RECEIVED
FEB 27 2002
OFFICE OF PETITIONS